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SCIENCE NEWS LETTER

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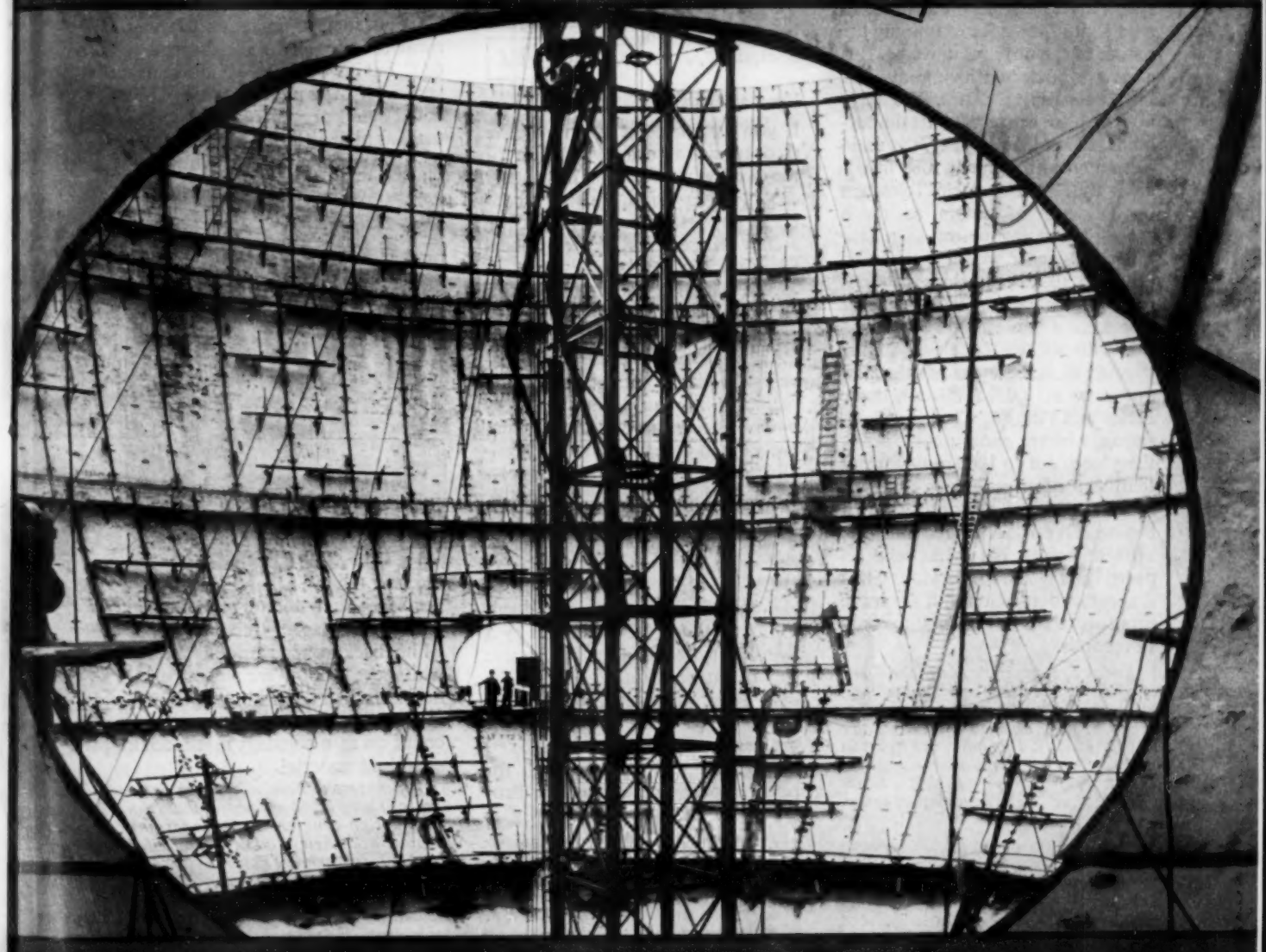
THE WEEKLY SUMMARY OF CURRENT SCIENCE



Atomic Sphere
See Page 271

A SCIENCE SERVICE PUBLICATION

Kodak reports to laboratories on:

super infrared sensitivity . . . a very minty ketone . . . solving the record storage problem . . . a photorecording paper for high temperature processing

Infrared sensitizer

The granules in the vial above represent a very significant advance in man's kit of tools for examining the nature of the physical universe. It is a new Kodak sensitizing dye for infrared-sensitive plates. We have no need to exaggerate its importance. For studies on, say, the main helium emission line at 1080 mμ, it gives the 200-inch Hale Telescope on Palomar Mountain as much space-penetrating power as a fantastic 900-incher would have had a year ago. (Thermonuclear reactions involving helium are, for better or worse, very interesting these days.)

We do not sell Kodak sensitizing dyes as such, but you get the new one now in Kodak Spectroscopic Plates and Films of Class Z sensitization, wherein photographic sensitivity goes out to 1200 mμ—farther than any other sensitizer commercially available. The spectral distribution of sensitivity remains the same as before, but it has been reported that where the previous Class Z sensitization required a 4-minute exposure, the new one requires only 12 seconds.

Kodak Spectroscopic Plates and Films of Class Z and other sensitizations—in many emulsion types and many sizes—are sold by the Kodak Industrial Dealer in your locality. It is advisable to get in touch with Eastman Kodak Company, Industrial Photographic Division, Rochester 4, N. Y., before placing an order.

Essence of an essence

Pulegone, a ketone isomeric with camphor, is now available from us to serve the needs of those delvers into the mysteries of olefaction who like to work with a pure chemical entity and don't like to bother laboriously separating it out of pennyroyal oil. Very minty in itself, it is readily converted into other minty materials. Under as little as 12 mm Hg pressure, its boiling range is way up at 95-98 C. Currently we are asking only $1.40 for 25 grams of it.

In addition to Pulegone (*Eastman 6739*) *we supply over 3500 other organic chemicals for science and industry. For a copy of our catalog, write to Distillation Products Industries, Eastman Organic Chemicals Department, Rochester 3, N. Y.*

New microfilmer

If you have not yet taken effective steps toward an orderly solution for the vexing problem of laboratory record preservation, we have a concrete suggestion—the Recordak Junior Microfilmer. A new model went on the market this year at $1550. This may seem like a stiff outlay for a device that will never point to new directions in scientific insight. But picture the peace enveloping the administrative mind secure in the knowledge that every notebook page, every table of data, every scrap of significant luncheon-table doodling, in a project involving many hands and many months, is safely captured in a small reel of 16mm film. The new microfilmer not only does the photography (36:1) but also projects the finished microfilm back (1:34). It takes documents up to 9½″ by 14″, and by a twin-lens system lays each successive pair of images side by side on the film. Reel length is 200 feet, but shorter lengths can be removed for processing at any time. Projected image quality is good enough for photocopies on Kodagraph Projection Paper.

The new Recordak Junior Microfilmer is demonstrated and sold by the Recordak Corporation, a subsidiary of Eastman Kodak Company, with offices at 444 Madison Avenue, New York 22, N. Y. If your microfilming requirements are not of a continuing nature, you may wish to rent one for $25 a month.

Hot-clime photorecording

Out in the world's lonely places roam the oil hunters, the field seismographic parties setting off their small explosions and recording the stratigraphically reflected or refracted vibrations on Kodak Linagraph 480 Paper. Some of the lonely places have climates such that a tank of processing solution can get scalding hot to the touch. Hot-clime seismographers could, if necessary, work out some refrigeration arrangement to achieve the recommended 68 F, but it would be a lot more convenient if their photographic paper could stand processing at temperatures as high as 120 F. On this point we have news: it can. Not only does

the new Kodak Linagraph 480 Paper take such treatment in stride, but it gives blacker traces on clean, white backgrounds and a surface with more "tooth" for pen or pencil notations. All this without a change in the speed range, which people count on as a constant in a Kodak sensitized material.

Seismographers and all others requiring a photorecording paper that can stand high-temperature processing should ask their Kodak dealers for Kodak Linagraph 480 Paper, Type 1272. (*Those last digits are important.*) *It comes in a great variety of sizes and spoolings, details of which are obtainable from Eastman Kodak Company, Industrial Photographic Division, Rochester 4, N. Y.*

This is one of a series of reports on the many products and services with which the Eastman Kodak Company and its divisions are . . . *serving laboratories everywhere*

Kodak
TRADE-MARK

MEDICINE

Safe Sleeping Pills

Announce development of drug combining a barbiturate compound with a stimulant drug that will give protection from barbiturate overdoses without checking beneficial effects.

➤ A "CHEMICAL policeman" expected to save thousands of lives from sleeping-pill death has been developed.

It consists of a combination of a barbiturate compound with a stimulant drug which, under the name Metrazol, has been widely used in shock treatment for mental sickness.

The drug combination was worked out by Dr. Theodore Koppanyi, professor of pharmacology at Georgetown University School of Medicine, and Dr. Joseph F. Fazekas, chief of staff at Gallinger Municipal Hospital, Washington.

Barbiturates are known by a host of names from slang terms such as goofballs and red devils to medical and trade names such as phenobarbital and luminal. They are extremely valuable drugs for inducing sleep, quieting restless and nervous patients, preparing patients for operation, and for anesthetics for some operations. They have also been used as hypnotic drugs in treatment of some psychiatric patients.

But they have been widely abused by lay persons seeking a thrill. They have been used as suicide drugs. And many deaths have been caused by accidental overdoses taken by persons in a befuddled or confused condition from the first dose or two.

Because of their close contact with fatal and near-fatal poisonings from barbiturates, Drs. Koppanyi and Fazekas tried to find some combination of drugs which would give protection against barbiturate overdosage without checking the beneficial effects of barbiturates.

They found the combination they were seeking when they tried barbiturates with Metrazol, or pentylenetetrazol as it is known medically, they report in the District of Columbia *Annals of Medicine* (April).

When given by mouth in relatively small doses this drug is a safe nervous system stimulant. Used in shock treatment of mental patients, it causes convulsions because it is given in larger doses injected rapidly into the vein.

Following trials of various combinations of this drug with barbiturates in experimental animals, three different combinations were tried in humans. More than 200 have now been given the combinations, some for as long as three months, without undesirable side-effects.

The combination drug produced sleep from which the patients could be easily aroused. They could walk without staggering and there were no convulsions. There were no signs of the mental fuzziness which often follows use of barbiturates alone. Even large doses did not cause memory loss or anti-social behavior.

A further advantage of the new combinations seems to be that they would tend to prevent attempted suicide when taken in extremely large doses for that purpose. This is because large doses of pentylenetetrazol cause nausea and vomiting, prevent the barbiturate depressing effect from producing complete paralysis of the breathing center in the brain, and delay the onset of this condition for a considerable time which would allow for medical treatment to overcome the effects of overdosage.

Three effective combinations were worked out by Drs. Koppanyi and Fazekas: three parts of pentylenetetrazol with one part of pentobarbital sodium; three parts of pentylenetetrazol with one part of secobarbital sodium; and one and a half parts of pentylenetetrazol with one part of phenobarbital sodium. These give doctors moderate acting, short acting and long acting forms of the drug to use, according to the kind that is needed for a particular patient.

The three combinations are being made by Strong Cobb and Company of Cleveland under the trade names Tetrophenobarb, Tetropentobarb and Tetrosecobarb. They will be available only by physician's prescription.

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ELECTRONICS

Portable TV Transmitter Serves Blocked Areas

➤ A SUITCASE-SIZED television transmitter has been developed to speed spot news to your video screen.

And if you live in a mountain-locked community, it may mean that television signals can be snatched from the skies and sprayed down to your antenna in the valley. But someone has to figure out how to make it pay.

The television transmitter plugs into ordinary household electric current. It takes the picture from the camera in the form of electric impulses. It beams both picture and sound to a receiver.

This means that a bad airplane crash in an out-of-the-way place can be televised from the spot, and can be relayed back to the nearest station scores of miles away. There it can be fed into the network for national telecasting.

The system can be reversed to pick up television programs from a far-away station and rebroadcast them locally. The transmitter was developed by the Raytheon Manufacturing Company.

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PORTABLE TRANSMITTER—Light enough to be picked up and moved about by one man is the small transmitter shown here. It was developed to speed sending of spot news from remote areas.

PSYCHIATRY

Psychiatric Interview Aid

Recording life histories, then playing them back, can speed psychiatric interviewing through full examination of reasons for and thoughts during the pauses.

➤ A MICROPHONE and a sound recorder can help speed psychiatric interviewing and even psychoanalysis.

The apparatus does this because it records not only what a person says but the pauses as he talks. When the record is played back, the patient can very often tell why he paused at that particular point and what he was thinking of as he paused.

The new method, developed by Dr. Walter Toman of Harvard University, is reported in the American Psychological Association's *Journal of Consulting Psychology* (Feb.).

In psychoanalysis, he points out, the basic rule is for the patient to say everything that comes into his mind. Whenever he pauses, the psychoanalyst may prod him. The prodding has two risks: 1. The patient may be diverted from the trend of free association, or of saying whatever comes into his mind. 2. The patient may be glad of the interruption if it gives him a chance to avoid talking about what was in his mind when he paused. The topic in his mind at the pause, however, may be important and it may take much time before he and the psychoanalyst get back to it.

To test the possibility of learning more quickly what goes on in the mind during a pause, Dr. Toman had 35 men and women, aged 18 to 34, speak their life histories into a microphone, allowing five to 10 minutes for each history.

The record was then played back and at each pause the machine was stopped and the man or woman asked to tell what was in his or her mind during the pause. Of the average of 54 pauses, an average of 17 could be interpreted by the speaker as being other than the "mere formal difficulty" of phrasing or searching for a word.

When called back for another session one to three months later, these men and women could remember an average of about five pauses. The content of the rest had been forgotten. About half of these were emotion-laden memories of early life. The rest were recent memories concerning present activities and relationships or thoughts about the test itself.

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MEDICINE

Link Imbalance to Cancer

➤ TOO MUCH or too little manufacturing of sex hormones in the body may lay the groundwork in women of 20 to 40 years of age for breast cancers which appear at 55 or 60.

Measurment of the exact amount of imbalance, now possible, might permit correction of this factor so that breast cancer never appears.

Dr. Robert Huseby, associate professor of surgery at the University of Colorado, has used both male and female sex hormones together in nine cancer sufferers. All had breast cancer upon which it was no longer possible to operate with any chance of success.

Three of the cases gave good to excellent responses, one showed a questionable response and five derived no benefit at all. The amount of both male and female hormones was varied according to the individual imbalance found in the patient.

To find out about these important imbalances, Dr. Huseby does such things as grafting a vagina on a castrated male mouse and transplanting a female mouse's ovary to her spleen.

Drs. Leo Samuels and Don Nelson of the University of Utah have developed a method for chemically measuring the hormones which circulate in the blood. With these measurements, it might be possible to determine which women are susceptible to various kinds of cancer. Thus the condition could be corrected before the cancer develops, if the right measures were taken promptly.

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NUTRITION

More Milk Makes Children More Lively

➤ THREE BIG glasses of milk a day instead of one for children produces better work in school, more liveliness, a dramatic reduction in some vitamin deficiencies and other beneficial results.

About 150 Canadian children attending a boarding school were tested for vitamin deficiencies, weight levels and other factors back in 1948 and 1949. After that they received the triple doses of milk each day, three eight-ounce glasses. Then in 1950, 1951 and last year they were tested again.

Dramatic reductions in vitamin A and B deficiencies were reported by Dr. L. Bradley Pett of the Department of Health and Welfare in Ottawa to the American Institute of Nutrition meeting in Chicago. The level was about one-eighth that of the original tests in 1948 and 1949. In addition colds and other respiratory diseases, infected tonsils and various minor illnesses declined, and general weight levels improved.

Dr. Pett said that unmeasurable benefits included more energy for recreation, better work in school and greater liveliness. There was no improvement in hemoglobin, ascorbic acid, nutrition or protein levels, all of which were average to start with.

Cost of the triple doses of milk was only doubled because some skim milk powder was used.

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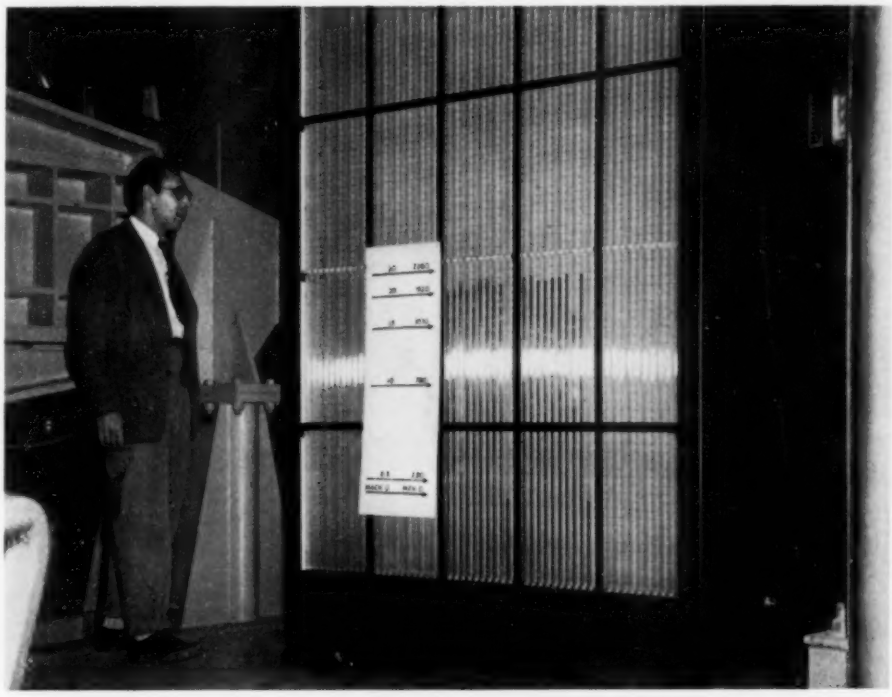

AIR FLOW SPEED—The tiny uneven streaks of mercury in the middle of the glass panel indicate speed of the air passing through a wind tunnel at the Arnold Engineering Development Center, Tullahoma, Tenn.

GENERAL SCIENCE

For Top Science Success

Psychologist finds in study of 20 of the country's top research scientists a minimum I.Q. of 130. Effort put into the job is "out of this world."

➤ YOU DO not have to be very intelligent, relatively speaking, to be the kind of scientist who wins Nobel prizes. But you must have extremely compelling reasons for becoming a research scientist in the first place and the effort you must put into the job "is out of this world."

These are the conclusions of Dr. Anne Roe, an industrial research psychologist of New York who has made an intensive study of 20 of the top research scientists of the nation. She reported on her findings to the Federation of American Societies for Experimental Biology meeting in Chicago.

Dr. Roe found a minimum I.Q. of 130 among her top scientists. The highest scorer was so high that he actually was unmeasurable, but she guesses that it was about 210. Average for the whole population is 100.

Dr. Roe also has tested a sampling of research scientists of all kinds. Right now she is working on the personality patterns of experimental biologists as a part of a survey of the state of physiological science in this nation. The survey will be used by the National Science Foundation to guide the basic scientific policy of the nation.

Dr. Roe said that most scientists are not very interested in personal relationships. They are unaggressive, but quite stubborn. Instead of letting their emotions rule them, they rely heavily on rational controls of their actions.

Many scientists, she found, have personality problems and, in fact, have gone into research as a sort of escape from those problems. However, this kind of escape does not really work, she said. Eventually the personality problem interferes with the research, or the research complicates the personality problem.

Dr. Roe asked for a change in the presentation of science at the primary and secondary school levels. Even the greatest of the scientists she studied, she said, did not find out they could be scientists until they were well along through college.

Such things as the Science Talent Search, the National Science Fair and the Science Clubs of America were designed to attack this very problem.

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PHYSICS

Body's Heat Spots Snooper in Frozen Fog

➤ BODY HEAT alone will reveal a man at 100 feet to a sensitive new detection instrument developed at the University of California to help the armed forces survive and fight in the Arctic.

The instrument was developed as a part of a study being made for the Snow, Ice and Permafrost Research Establishment (SIPRE) of the U. S. Army Corps of Engineers.

The detector came out of an investigation of an Arctic phenomenon called the "white out," which is a sort of frozen fog or cloud of ice crystals suspended in the air.

A man walking into such a fog disappears after he has gone only a few feet. When two men are walking together, they may lose sight of each other. An enemy could walk up undetected to a military installation in a "white out." The new radiation instrument to detect a human by his body heat is a beginning of efforts to locate men lost in a "white out."

A directly opposite phenomenon is also being studied in the project. Under certain Arctic conditions a man can be detected at a distance of several miles even though he may be dressed in the best available white clothing.

The broad study involves the absorption and reflection of heat energy in the Arctic. The study seeks information to help provide better clothing, equipment and shelters. The research team includes R. V. Dunkle, J. T. Gier, A. J. Test and J. T. Bevans.

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ELECTRONICS

Check-Writing "Brain" Can Spot Legal Loopholes

➤ YOUR PAY-CHECK some day may be written by an electronic "brain."

The big digital computers may also figure out fast traffic routes through congested cities. They may plan highways, prepare handbook data, and figure up your electric and telephone bills.

They may even spot loopholes for you in long, legal documents.

These jobs were termed possible for large-scale "brains" by Allen Keller, General Electric Company turbine engineer. He told the American Society of Mechanical Engineers meeting in Detroit that the computers can be used to extend engineering skills, particularly in routine engineering problems involving little but arithmetic and curve-reading.

Punched-card machines already are being used in General Electric laboratories to figure out critical speeds of turbine shafts, for evaluating stresses and for making theoretical fluid flow studies. They even have been used to schedule drawing-office output.

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BIOCHEMISTRY

Furan Chemical Makes Male Infertile—in Rats

➤ IF RATS were men or at least lived a man's life span, a chemical compound derived from peanuts, corncobs or oat hulls might sterilize them for about four years. Ten-month-old rats have had their sperm production stopped by such compounds, called nitrofurans, for as long as six weeks. Translated into terms of how long a man lives, this would be about four years in which a man so treated could not produce children.

Dr. Warren O. Nelson and Emil Steinberger of the State University of Iowa College of Medicine reported on this cessation of sperm production in rats to the American Physiological Society meeting in Chicago.

They said they gave the nitrofuran compounds to the rats either by mouth or by injection. The three compounds used are furacin, furadorxyl and furadantin which were effective in that order. The doses required to make the rats sterile caused no other detectable change in the animal and no evidence of permanent damage was found.

The scientists said nothing about any effect on man. They said that, in the presence of nitrofurans, the sperm-producing cells in rats are unable to secure the necessary energy for continued development and remained as immature cells until treatment was withdrawn.

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ELECTRONICS

Machine Reproduces Itself by Using "Brain"

➤ NOW SCIENCE promises a mechanical "brain" or electronic computer that can reproduce itself, a behavior considered unique to living things.

Dr. Claude E. Shannon of Bell Telephone Laboratories told the Case Institute of Technology diamond jubilee convocation in Cleveland that an abstract mathematical model of such a machine that begets other similar machines has been developed. This machine which he termed "fascinating but somewhat sinister" is not yet in production.

Such a machine would collect parts such as it was built from, assemble them into a second machine of the same sort. The "baby" machine, which, however, would be full-grown at "birth," would itself start collecting parts to construct a third machine. And this could continue so long as the parts supply lasted.

Computers can be made to act very much as though they were thinking, Dr. Shannon explained. They can be set up to play various kinds of games, such as bridge and chess, applying general principles so effectively that they defeat the people who designed them.

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LIFELIKE PELYCOSAUR—A fossil skeleton of the giant reptile that lived in Texas some 230,000,000 years ago has just been added to exhibits at the Chicago Natural History Museum. Pelycosaurs were ancestors of the mammal-like reptiles called therapsids, and both belong to groups that form links between mammals and reptiles.

MEDICINE

Blood Substance X

➤ A MYSTERIOUS substance X in the blood causes people to produce the white blood cells which fight disease when they are subject to physical or emotional stress.

Dr. Thomas F. Dougherty and Dr. Jules A. Frank of the University of Utah announced that they had discovered this substance X and that it counteracts the white blood cell killing action of the adrenals, the organs of stress. Too much hormone from the adrenals causes the production of these cells to go down, substance X brings production back up.

This substance X actually stimulates production of one of two kinds of white blood cells which they call the stress lymphocytes. The normal cells, or lymphocytes, are killed, destroyed, broken up by the action of the hormones.

Thus patients with many kinds of diseases depending on the production of white blood cells may have those diseases influenced by the balance between how much adrenal hormone is produced and how much substance X is produced.

The two scientists said they actually have seen this substance, which is a chemical that can be separated from the blood, but they do not know what it is yet. They think it may be an amine, similar to histamine.

Such diseases as rheumatoid arthritis, tuberculosis, allergies are affected by the amount of white blood cells produced. In some cases it is a good thing to have greater production of white blood cells, in other cases, too many white blood cells may be produced for the good of the patient.

Dr. Dougherty believes that the white blood cells of leukemia, incurable cancer of the blood, may be even more resistant to the killing effects of adrenal hormones than his stress cells. Thus the stress cells may be one key to the overproduction of leukemia cells.

Measurement of the balance between adrenal hormone production and substance X may be a tool in deciding how good a chance a patient has to survive a disease. Drs. Dougherty and Frank examined blood specimens of 30 patients sent by mail from a Denver tuberculosis sanitarium. They were able to tell from the white blood cell counts and blood reactions to hormones whether the patients miles away in Denver were very ill, cured or responding to treatment. A check with Denver showed they were right in all cases.

Dr. Dougherty has a hunch that substance X is a product or a result of the destruction of normal white blood cells, but his studies have not gone far enough to tell whether that hunch is correct.

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GENERAL SCIENCE

Political Ax for Scientists?

Furor in Washington and nation-wide scientific circles over dismissal of Dr. A. V. Astin as director of National Bureau of Standards focuses attention on heads of other bureaus.

➤ WITH SCIENTIFIC Washington in a turmoil over the ouster of the Director of the National Bureau of Standards, traditionally a non-political job, there is apprehension that more heads of scientific bureaus will feel the political ax.

Threats of mass resignations by scientists may give the Eisenhower administration sufficient warning to prevent the displacement of other chiefs of scientific bureaus.

Inevitably any scientist who is worth his salt will displease someone. It may be a person who wants what amounts to a fake recommendation for a commercial product. It may be someone who feels that some local project is being slighted. If political action can displace the honest scientist who does not yield to pressure, the scientific services of the government will be in a bad way.

That is why scientific groups that have never passed such resolutions before became vocal with success in demanding that Dr. A. V. Astin be kept as Bureau of Standards director at least until scientific committees investigate and report. They warn that scientific and technological agencies of the federal government must maintain "an atmosphere of disinterested investigation free from political and commercial pressures."

A sensitive position from the standpoint of protection of the public against drugs and foods that will harm health or pocketbooks is the commissioner of the Food and Drug Administration in the Department of Health, Education and Welfare, formerly the Federal Security Agency. The present commissioner is Charles W. Crawford who has risen to that position through service in the organization since he joined it as a chemist in 1918.

The Surgeon General of the U. S. Public Health Service, Dr. Leonard A. Scheele, is also a career officer, in charge of major investigations and services of great importance to the national health.

In the Department of Commerce along with the Bureau of Standards is the U. S. Weather Bureau, a scientific organization. It is headed by Dr. F. W. Reichelderfer who has been chief since 1938 and before that meteorological officer in the U. S. Navy for 20 years. The weather is always controversial, especially so since there has been rain-making.

In the Department of the Interior, the U. S. Geological Survey, in charge of mapping and geological resources, is a major scientific bureau, headed by Dr. William E. Wrather, world-famous geologist.

The Fish and Wildlife Service is headed by Albert M. Day who joined this organization in 1918 when it was the old Biological Survey in the Department of Agriculture. On April 17, it was announced Mr. Day is being replaced. This organization protects and administers many of the natural areas and resources of the nation and potentially is in conflict with invaders of the public holdings.

In the Department of Agriculture the various scientific bureaus are headed by scientists who are under Civil Service, supposedly immune to removal by political decision.

Such scientific leaders are traditionally not changed with political administrations, even though some of them are presidential nominations confirmed by the Senate. Many of them are under Civil Service as well as career men.

A few heads of bureaus that have much to do with science, research and technology have come to be political in their tenure, such as the Commissioner of Patents, Director of the Census Bureau, the Bureau of Reclamation and the Office of Education. Some, like the Director of the Bureau of Mines, have been surrounded by some political overtones, although the present director, John J. Forbes, has been in the bureau for 37 years.

Top science officials and administrators are known to be concerned about the rumored establishment of a personnel schedule by the Eisenhower administration that would cover confidential and policy-making positions and remove them from Civil Service regulations. This presumably could be used to open the way to removal of scientists and others who would not yield to political or business pressures.

The scientific employees of the government would be reassured if there were action by the new administration that gave evidence that research, development and testing activities will continue to be carried on in an atmosphere free of non-scientific pressures, and that administrators and project supervisors of scientific activities will continue to be chosen on the basis of their scientific qualifications.

No further attempts at political ousters would be concrete assurance in this direction.

Scientific societies and organizations that have made protesting statements concerning the Astin affair to the White House or to Secretary Weeks include the American Association for the Advancement of Science, American Institute of Physics, American Chemical Society, International Electrochemical Society, Washington Academy of Sciences, Philosophical Society of Washington, Washington Chapter of Radio Engineers, Federation of American Scientists and Atomic Scientists of Chicago.

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GENERAL SCIENCE

Astin Ouster Delayed Through Summer Months

➤ SECRETARY OF Commerce Sinclair Weeks on Friday, April 17, asked Dr. A. V. Astin to stay on as director of the National Bureau of Standards until the special evaluation committee headed by Dr. M. J. Kelly, president of Bell Telephone Laboratories, completed its study, expected in late summer or early fall.

Dr. Astin said he had agreed to continue as director regardless of his "personal opinions or wishes."

The Secretary's last-minute action, for Dr. Astin's tenure ended at midnight on April 17, had White House approval. Mr. Weeks stated, however, that there was "no question of Dr. Astin's permanent retention," but that it was felt that he would be "most helpful" in the evaluation study.

The Federation of American Scientists, a nation-wide organization of scientists, called the action "welcome but incomplete." The chairman, Dr. David Hill of Vanderbilt University, Nashville, Tenn., urged a "full independent investigation of the motives and circumstances surrounding the Astin dismissal itself" addressed to the broader policy questions the ouster raised.

In announcing Dr. Astin's temporary retention, Mr. Weeks pointed out that "at no time has there been any intent, implied or otherwise, to cast reflections on the integrity of the bureau or on the professional competence or integrity of Dr. Astin."

Such differences as he had had with the director, Mr. Weeks stated, result "from a conflict with respect to administrative viewpoint and procedure."

On the day following the Secretary's announcement, Senator Edward J. Thye, chairman of the Senate Small Business Committee, announced that hearings on the affair, originally scheduled for April 22, had been canceled because they might "becloud the issue."

Secretary Weeks also said he had asked Dr. Detlev W. Bronk, president of the National Academy of Sciences, to appoint a special committee to "objectively appraise the quality" of the bureau's work involving battery additive AD-X2, their study to include both laboratory and field tests.

During the next several months, Mr. Weeks announced, the Visiting Committee of the Academy will be making a canvass to "bring forward a panel of names" from which he expected to select a new director of the bureau.

Science News Letter, April 25, 1953

There are special summer camps for *diabetic* children which may help the youngsters even more than other camps help non-diabetic children.

GENERAL SCIENCE

Name Scientist Judges For Science Fair Exhibits

➤ AN ARRAY of distinguished scientists will judge the work of high school boys and girls who have won trips to the National Science Fair to be held at Oak Ridge, Tenn., May 7, 8 and 9.

They will include leaders in the fields of biology, chemistry, physics, geology, astronomy, astrophysics, engineering, medicine, nuclear physics, biophysics and biochemistry. The fair will be held at the American Museum of Atomic Energy.

The National Science Fair is sponsored by leading newspapers from the Atlantic to the Pacific and SCIENCE SERVICE through its organization, the Science Clubs of America.

High school students achieve the right to come to the National Science Fair by winning top positions in local fairs. About 70 are expected to be on hand with exhibits of their scientific achievements. They will compete for valuable awards in several categories.

The judges are Dr. Gould A. Andrews, Dr. R. A. Charpie, Dr. Cyril L. Comar, Logan B. Emlet, Dr. Alexander Hollaender, Dr. Clarence E. Larson, Dr. Russell S. Poor, Dr. Elizabeth Rona, Dr. Herman N. Roth, Morse Salisbury, Dr. Carl Seyfert, Dr. C. S. Shoup, Dr. Arthur H. Snell, Dr. John A. Swartout and Dr. Alvin M. Weinberg.

Science News Letter, April 25, 1953

PSYCHOLOGY

Mental Deficients Make Later Life Adjustments

➤ PEOPLE WHO have been judged mentally deficient when they were in grade school make a much better adjustment to life than is generally believed. Further, they generally give birth to children of average, rather than deficient, mental capacities.

These are the findings in the study of 151 people with an average age of 42 who had low IQ's when they were in grade school and who were placed in "opportunity rooms."

"Social achievement and/or test scores suggest that about 65% of the subjects who tested low originally now give evidence of being in the dull-normal or average range," said Don C. Charles of the psychology department, Iowa State College, who conducted the survey.

Nearly 20% of the group, however, give evidence of life-long deficiency. This group has required, or still does require, institutionalization. Another 10%, while still testing quite low, have become fairly well adjusted and self-sufficient members of society.

"The great majority of their children," Mr. Charles said, "proceed through school with little or no retardation and the mean of the children's intelligence test scores is in the average range. Very few of the children have required opportunity room training as their parents did."

But the original group still continues to differ from the general population in various ways. A lower percentage is married and the married have slightly fewer children than the average. The death rate is somewhat greater than average, and the rate of violent death is much greater than average.

"The great variation in the present abilities and achievements of the subjects should dispel any notion that persons who give evidence of low ability in childhood develop and perform according to a rigid stereotype," Mr. Charles concluded.

Science News Letter, April 25, 1953

TECHNOLOGY

Wire Rope Developed For Drilling Oil Wells

➤ A WIRE rope with a plastic heart has been developed for use in drilling oil and gas wells.

Developed at Muncy, Pa., by Jones and Laughlin Steel Corporation scientists, the rope's plastic core replaces the fiber core in wire ropes now used to support the heavy drilling bit as it pounds through hard rock deep in the well.

The polyvinyl plastic core is unaffected by acids, caustics and other sub-surface substances that gnaw away fiber cores. It also can be spliced so that no strength is lost at the joint. It does not need moisture, as a fiber core does, to retain its resiliency. This, in turn, reduces chances of the steel strands rusting.

An added advantage is that the plastic can be made from materials produced in this country. Fiber for hemp cores must be imported. During wartime the supply of imported hemp might be uncertain.

Science News Letter, April 25, 1953

PUBLIC HEALTH

Korean PW Treatments Improve Dysentery Cure

➤ EXPERIENCE With dysentery in a United Nations prisoner-of-war camp in Korea has given the world better treatment for the disease.

The newer so-called mold remedies, terramycin, aureomycin and chloromycetin, gave strikingly good results in prisoner-patients who had dysentery that resisted sulfa drug treatment, a six-man team of Army, Navy and public health scientists report in the *Journal of the American Medical Association* (April 4).

The report is signed by Lieut. Bernard T. Garfinkel, (MC), U. S. Army (Reserve), Lieut. Gerald M. Martin (MC), U.S.N. (deceased), Dr. James Watt, Bethesda, Md., Capt. Fred J. Payne (MC), U. S. Army (Reserve), Col. Richard P. Mason (MC), U. S. Army, and Dr. Albert V. Hardy, Jacksonville, Fla.

Science News Letter, April 25, 1953

IN SCIENCE

METEOROLOGY

Winter-Coat Weather Still Likely in North

➤ BETTER KEEP the winter coat out of storage for a while longer if you live in the northern half of the country. The U. S. Weather Bureau's outlook for the period to mid-May calls for temperatures lower than normal for the season both in the North and over much of the Southwest.

Snowstorms such as that which killed at least two persons in New England April 14 are not considered likely, though the northern tip of Maine and the northern Great Lakes region may still get a little snow.

The south Atlantic and Gulf states will be warmer than normal at this season with the rest of the nation enjoying near normal temperatures.

More than normal amounts of rain, if not snow, are expected over the northern half of the country but subnormal rainfall is indicated over the Southwest. Elsewhere about normal rainfall is predicted.

Science News Letter, April 25, 1953

INVENTION

Method for Avoiding Twilight in the Arctic

➤ A TWILIGHT computer for use in planning flights over the Arctic has been patented.

When flying in the Arctic, navigation by stars or the sun is much more important because of the scarcity of radionavigation aids and the unreliability of the magnetic compass. Therefore pilots like to avoid flying in the frequent, greatly-extended periods of twilight.

The inventors, who assigned their patent to the Canadian national defense department, point out that, on westward flights in the Arctic, it is entirely possible to keep up with the speed of the sun and thus possible to remain in a permanent state of twilight. In some cases the plane can go faster than the sun, in which case the sun could rise in the west rather than the east.

To avoid these confusing phenomena, the twilight computer was invented by James W. Cox, Manor Park, Ontario, and Keith R. Greenaway, Ottawa. The device is designed to facilitate the calculations of the relative positions of the twilight band and a proposed aircraft route. It will also indicate what stellar bodies may be observed.

The computer is in the shape of a chart of the Arctic regions as if seen from outer space. The line of demarkation between light and darkness moves across the face of the chart. Patent number is 2,633,295.

Science News Letter, April 25, 1953

E FIELDS

ASTRONOMY

First Comet of Year Discovered in Pegasus

➤ The FIRST comet of 1953 has been discovered in the constellation of Pegasus, the winged horse, visible from the United States in the northeast during the early morning hours.

Of ninth magnitude, the diffuse stellar object is too faint to be seen with the naked eye. The comet will be known as Comet Mrkos after its discoverer, Antonin Mrkos of the Astrophysical Observatory at Skalnate Pleso, Czechoslovakia. This is the fourth comet spotted by the astronomer. The other three, all of the tenth magnitude, were found in December and May, 1952, and in January, 1948.

Report of the April 12 discovery was cabled by Dr. Guth and Miss J. M. Vinter-Hansen of Copenhagen University Observatory to Harvard College Observatory, clearing house for astronomical information in the Western Hemisphere.

When spotted in the sky, the comet's position was: right ascension, 21 hours, 11.2 minutes; its declination, plus 16 degrees, 14 minutes. Its daily motion is plus 1 minute, 26 seconds in right ascension and plus zero degrees, 58 seconds in declination.

Science News Letter, April 25, 1953

PUBLIC HEALTH

Sniffles in Spring May Be Hay Fever

➤ MOST PERSONS think of hay fever as a midsummer or late summer affliction. So it is for the many who suffer because of ragweed pollen.

A good many who are sniffling and sneezing in the spring, however, are victims of early hay fever, or rose fever as it used to be called, from pollens that are blown on spring breezes. Others, of course, have a common cold which is also a prevalent spring ailment. If the spring sniffles last more than a few days, it would be well to see the doctor to learn the cause and get suitable treatment.

This is the time, too, for ragweed hay feverites to start treatment to ward off their late summer misery.

The treatment is a process of de-sensitizing the sufferer. First, the physician makes careful tests to determine just which pollen or pollens cause the trouble. Then the patient is given a tiny dose of the offending substance and at regular intervals thereafter increasingly large doses until he is able to tolerate large amounts of pollen. Details of the treatment, of course, must be planned by the physician who will also give advice on general health measures and will prescribe drops for nose and eyes if necessary.

Desensitization treatment can be given during the hay fever season, but is said to be more comfortable and about 20% more efficient if given before the season starts.

The antihistamine drugs bring relief to many hay fever victims, but physicians usually advise desensitization treatments in addition. Some authorities believe the best results are obtained when the antihistamines are used with the desensitization measures to prevent reactions from these.

Science News Letter, April 25, 1953

TECHNOLOGY

Pump and Motor Beats Line and Net Fishing

➤ MAYBE THIS is the answer to a frustrated fisherman's dream: a baitless, hookless, netless and pretty sure-fire method of catching fish—with a pump. It could be the next best thing to bailing out a lake and picking the fish off the dry bottom.

All you need is a four-inch impeller pump, a five horsepower electric motor and a powerful underwater lamp. Switch on the lamp and turn on the pump. As the fish are attracted to the light, the suction pulls them through the intake pipes and dumps them on deck.

That is the theory, anyway.

Dr. J. G. Ellson of the U. S. Fish and Wildlife Service, Seattle, said that test runs of such pump equipment "netted" catches of small fish on seven out of eight occasions. The fish were mostly smelt one to two inches long, and herring up to about nine inches. Other species were taken only in small numbers.

In terms of efficiency, the fish pump seems still a long way from the fisherman's dream. But if perfected and used in connection with fishing gear like the electrical attraction devices being developed, fish pumps could play a major part in a new fisheries era.

Science News Letter, April 25, 1953

TECHNOLOGY

Stalled Diesels Treated Just Like Balky Mules

➤ ARMY INGENUITY has licked a problem that was stalling diesel railroad operations in Alaska this winter.

Cold, 60-degree-below-zero weather was causing diesel oil to thicken so that it could not be pumped into the engine. The Army took steps comparable to lighting a fire under a balky mule: it "lit a fire" under the sluggish oil.

This was accomplished in a heat exchanger by circulating hot water from the engine through coils running close to the oil lines feeding the engine. The heat given off by the hot water warmed the oil and permitted it to be pumped into the engine's burner.

Science News Letter, April 25, 1953

MEDICINE

Stomach Cancer Oftener With Type A Blood

➤ A RELATION between cancer of the stomach and blood type has been discovered by Drs. Ian Aird and H. H. Bentall of the University of London and the Postgraduate Medical School of London.

Blood group A is found oftener in stomach cancer patients than in the general population of the locality in which the patients live. Blood group O is found less often in the stomach cancer patients than in the general population. The doctors announce this discovery in the *British Medical Journal* (April 11).

This relation, found in patients in a number of hospitals in England and Scotland, is also found in patients in Basle, Switzerland. Whether it occurs elsewhere the London doctors have not yet learned.

The findings show that there is an inherited element in the susceptibility to or protection against cancer of the stomach.

For the first time, it appears, the blood groups may have some selective value, even if slight, for survival. Persons having blood of group A may have slightly less chance of living out a normal life-span because of their genetic susceptibility to stomach cancer.

The doctors plan to study further this relation between blood groups and cancer, to see whether it holds good for patients with cancer of other parts of the body.

Science News Letter, April 25, 1953

MEDICINE

Whiskey Relieves Angina Pains by Sedative Action

➤ A SHOT of Scotch or rye whiskey can relieve the pain in the heart disease, angina pectoris. But it does this entirely through its sedative action, not by dilating blood vessels.

This finding, which may settle the disagreement among doctors on the place of alcohol in treating heart disease, was reported by Drs. Henry I. Russek, Alexander A. Doerner and Burton L. Zohman of Staten Island, N. Y., at the meeting of the American Heart Association in Atlantic City, N. J.

Narrowing of one of the arteries supplying the heart muscle is the trouble in angina pectoris. Consequently the aims of treatment, both to relieve pain and keep the heart working, is to dilate the arteries.

Most effective for this purpose are nitroglycerine, which has been used for some time, and peritrate, a more recent modification of nitroglycerine, Dr. Russek and associates reported.

They based their statements on electrocardiograph recordings of the heart action of the patient during a standard exercise test. They observed the effect on these records of treatment with nine drugs besides nitroglycerine, peritrate and the whiskeys.

Science News Letter, April 25, 1953

ASTRONOMY

Ringed Planet Prominent

Saturn and star Spica are two bright celestial objects in May. Stars in the familiar Great Dipper are named by a three-century-old custom, an exception to the usual system.

By JAMES STOKLEY

► HIGH IN the south these May evenings two bright celestial objects may be seen. One is the star Spica in Virgo, the virgin, while just above it, and about 75% brighter, is the planet Saturn, famous for its system of rings which a telescope is needed to reveal.

Both the star, which shines by its own light, and the planet, which reflects to us the light of the sun, are shown on the accompanying maps. These indicate the positions of the stars at about 10 p.m., your own kind of standard time, at the first of May, and about nine o'clock at the middle. (Add one hour if you are on daylight time.)

Saturn is the only planet shown. The rest are stars, presenting their typical springtime aspect. High in the north, at about its best evening position of the year, we see the Great Dipper, actually part of Ursa Major, the great bear.

The dipper is upside down, with the pointers, two stars in the bowl of the dipper, toward the left. Following their line downwards we come to Polaris, the pole star, which is at the end of the handle of the little dipper, part of Ursa Minor, the little bear.

Guide to Other Stars

By following around to the south the curved line of the handle of the big dipper, we are easily led to the bright star Arcturus, in Bootes, the bear-driver. Continuing still farther we come to Spica, near which Saturn stands, and then to the little constellation of Corvus, the crow, four stars arranged in the shape of a mainsail.

To the right of Virgo is the lion, Leo, in which there is a sub-group known as the sickle. Regulus is at the end of the handle, which points downwards, while the blade is directed toward the southwest. As a lion, the blade forms the head, while Denebola, a bright star to the left, is part of its tail.

Toward the west appear all that remain of the brilliant constellations of the winter evening sky. There are the twins, Gemini, with Castor and Pollux, the latter of the first magnitude. Lower, and to the right, is Auriga, the charioteer, with Capella, normally brilliant but now somewhat dimmed by reason of its lowness in the sky. And to the left is Procyon, in Canis Minor, the lesser dog.

Looking toward the east we find some of the stars that will shine brightly in summer evenings just making their debut. In the southeast there is Scorpius, the scorpion, with the stars Antares coming into view. Farther north is Cygnus, the swan, with Deneb, while above this bird is Lyra, the lyre, with brilliant Vega, brightest star of summer evenings.

As for the other planets, Mars set so soon after the sun that it is not easily visible. Jupiter is directly beyond the sun on May 24, and being so nearly in line with that body cannot now be seen. Mercury also is too near the sun for us to see, but Venus now shines brilliantly in the morning sky, visible low in the east before sunrise. On May 19, it is at greatest brilliance, as conspicuous before dawn as it was in the western evening sky in early March.

Most Familiar Constellation

Of all the stars in the sky, probably none are more familiar than the seven shining in the northern sky that form the Great Dipper. To the astronomer these are designated by the system introduced more than three centuries ago by a German astronomer named Bayer.

In his famous star atlas he used Greek letters for the stars in a constellation, usually in order of brightness. Thus the brightest would be alpha, the next beta, and so on. But he made some exceptions to this rule and one involved the Great Dipper. Doubtless because of the familiarity of this group, he started with the pointers, calling them alpha and beta and extending around the bowl and to the end of the handle.

According to this system, the pointer nearer the pole is alpha Ursae Majoris, the Greek letter being followed by the Latin name of the constellation (in the genitive case). Beta Ursae Majoris is the other pointer, and so on through gamma, delta, epsilon and zeta to eta, the last.

But, in addition, these stars have other names which are not often used. Few people, even few astronomers, know these without looking them up, but starting with alpha they are: Dubhe, Merak, Phad, Megrez, Alioth, Mizar and Benetnasch. Close to Mizar there is a fainter star, which can be seen with the naked eye without great difficulty, which also has a proper name—Alcor. All of these names, like many of the star designations, are derived from the Arabic.

Star Groupings Accidental

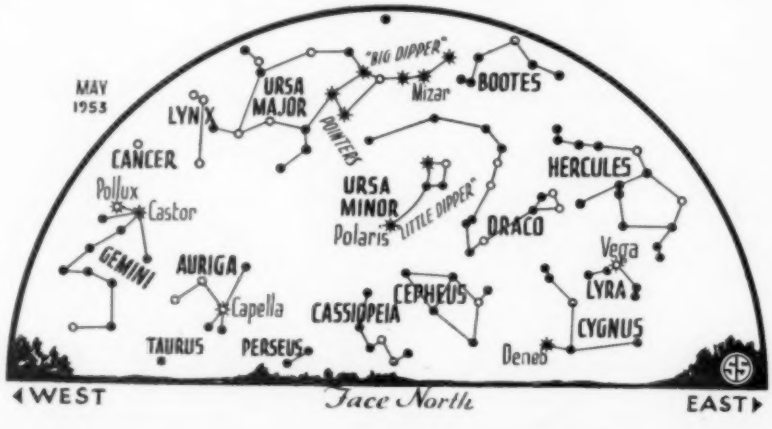
It is seldom realized that the star groupings are quite accidental, depending on the direction from which we look at them. That is, two stars which we see as very close in the sky may actually be a vast distance apart, but lined up so that from this part of the universe we see them together.

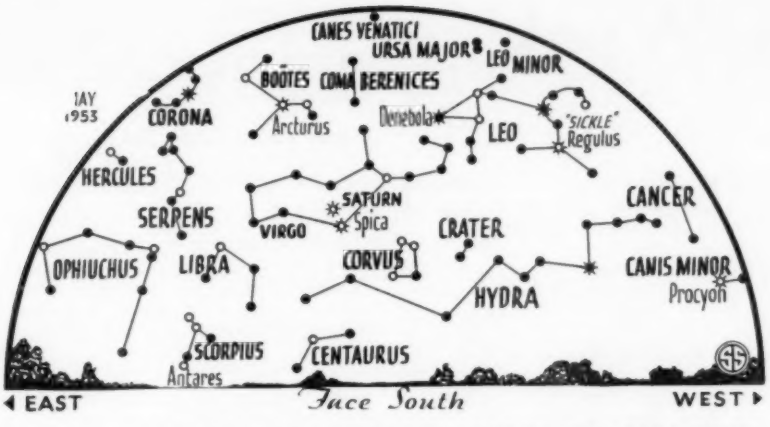
From a planet moving around some distant star, the star groupings would be entirely different from those which we observe.

In the dipper it happens that Dubhe and Phad are at roughly the same distance from us. The former is 91 light years away (a light year being the distance, about 6,000,000,000,000 miles, that light travels in a year), while Phad's distance is 93 light years. Benetnasch is more than twice as far, at 217 light years, while Alioth is only 49 light years distant. The remaining three, Megrez, Merak and Mizar, are, respectively, at distances of 65, 72 and 78 light years.

But even from our part of the universe this star figure, like the others, is not permanent, for the stars are moving. Astronomers resolve such star motions into two components.

One called "proper motion" is that at right angles to a line from the star to the earth, and it is this that changes the place





of a star in the sky. The other component is called "radical velocity," and that measures the movement of a star toward or away from us. It happens that the radical velocities of all the dipper stars are not very different. They are all moving toward us, at speeds varying from 5.3 miles per second for Dubhe to 7.5 miles per second for Megrez.

However, their proper motions are quite different. Dubhe and Benetnasch, the stars at both ends of the grouping are moving westward, while the others are going eastward together. Thus it just happens that they are passing the other two at the present to give the dipper figure. Fifty thousand years from now, just as that many years ago, the group will look very different from its present appearance.

Story of Mythology

The stars themselves also vary considerably. Alioth, the brightest, is nearly five times as brilliant as Megrez, the faintest.

The spectroscope, which analyzes a star's light, shows that Dubhe belongs to spectral class G, of which our sun is a member. These are stars of rather yellow colar. Benetnasch is type B, like Spica, in Virgo, and the stars seen in the wintertime in the belt of Orion. These are blue stars, with large amounts of helium and hydrogen in their atmospheres.

The other five—which are moving along together—are all of type A, like Sirius. Hydrogen is prominent in their atmospheres, and they are blue in color.

Such is some of the scientific information which astronomers have learned about these stars, but mythology also has a story about them. Greek legend relates that the beautiful nymph Callisto, daughter of Lycaon, the king of Arcadia, made Juno jealous of her. Jupiter therefore turned Callisto into a bear, thinking that it would protect her from injury. But Juno found out what had been done and persuaded Diana, the famous huntress, to slay the bear.

Then Jupiter placed her in the sky, as the constellation of Ursa Major, where she has been safe ever since. Later, the legend continues, Callisto's son, Arcas, was also placed in the sky, as the constellation of Ursa Minor. But even this did not satisfy Juno, so she induced Tehthys and Oceanus to prevent the bears from ever descending into the ocean, like the other stars.

Therefore they are among the circumpolar constellations, those that are so close to the north celestial pole, the center around which all the stars turn daily, that from these latitudes they never go below the horizon.

Celestial Time Table for May

May	EST	
9	12:00 mnt.	Moon nearest, distance 227,200 miles.
10	2:14 p.m.	Moon passes Venus.
13	12:06 a.m.	New moon.
14	6:13 a.m.	Moon passes Mars.
19	1:00 a.m.	Venus at greatest brilliancy.
20	1:20 p.m.	Moon in first quarter.
21	9:00 p.m.	Moon farthest, distance 251,200 miles.
24	11:00 p.m.	Jupiter beyond sun.
25	3:32 a.m.	Moon passes Saturn.
28	12:03 p.m.	Full moon.

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, April 25, 1953

MEDICINE

Electricity on Chest Starts Hearts Beating

➤ HEARTS THAT stop can be made to beat again by an electric current across the chest.

Success with this electric stimulation method in one case, with the electric impulse acting as the sole "pacemaker" of the heart for five days when it resumed beating on its own, was reported at the meeting of the American Heart Association in Atlantic City, N. J.

Besides this life-saving role, the electric stimulation experiments are expected to give doctors new knowledge about disturbances in heart rhythm. The experiments were reported by Drs. Paul M. Zoll, Leona R. Norman and Arthur J. Linenthal of Boston.

Science News Letter, April 25, 1953

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CHARTERS OF FREEDOM—*National Archives*, 16 p., illus., paper, 25 cents. Readable facsimiles of the Declaration of Independence, the Constitution and the Bill of Rights with a brief historical sketch of each.

THE COMETS AND THEIR ORIGIN—R. A. Lyttleton—*Cambridge University Press*, 173 p., illus., $5.00. Presents known observational facts about comets, a theory of their origin, and explains how their tails are formed.

DRAFTING BY THE MODEL METHOD—John B. Musacchia, Henri A. Fluchere and Melvin J. Grainger—*Arco Publishing*, 143 p., illus., paper $3.50, cloth $5.00. A complete course in drafting employing cut-out three-dimensional models.

THE EFFECT OF QUENCHING AND TEMPERING ON RESIDUAL STRESSES IN MANGANESE OIL HARDENING TOOL STEEL—Harold J. Snyder—*Mellon Institute of Industrial Research*, 17 p., illus., paper, free upon request to publisher, 4400 Fifth Avenue, Pittsburgh 13, Pa.

EX-PRODIGY: My Childhood and Youth—Norbert Wiener—*Simon and Schuster*, 309 p., illus., $3.95. The autobiography of a great mathematician and the creator of cybernetics.

FOOD-BORNE INFECTIONS AND INTOXICATIONS—Fred W. Tanner and Louise P. Tanner—*Garrard Press*, 2nd ed., 769 p., $12.00. Includes chapters on food hygiene, ptomaine poisoning, the dysenteries, brucellosis, botulism, etc.

FRESH-WATER INVERTEBRATES OF THE UNITED STATES—Robert W. Pennak—*Ronald Press*, 769 p., illus., $14.00. Covers the free-living fauna (including aquatic insects), with emphasis on natural history, ecology and taxonomy.

HISTORY OF ANESTHESIA: With Emphasis on the Nurse Specialist—Virginia S. Thatcher—*Lippincott*, 289 p., illus., $5.00. A history of the pioneer anesthetists.

INTRODUCTION TO PSYCHOLOGY—Ernest R. Hilgard—*Harcourt, Brace*, 659 p., illus., $7.50. For the general student and the intended major in psychology, this deals with topics which concern the contemporary psychologist.

JUNG'S PSYCHOLOGY AND ITS SOCIAL MEANING—Ira Progoff—*Julian Press*, 299 p., $5.00. An interpretation of Jung's concepts and their significance for the social sciences.

KIVA MURAL DECORATIONS AT AWATOVI AND KAWAIKA-A: With a Survey of Other Wall Paintings in the Pueblo Southwest—Watson Smith—*Peabody Museum of American Archaeology and Ethnology*, 421 p., illus., paper $7.50, cloth $10.00. A description and analysis of the layouts, patterns, design elements and ceremonial significance of the murals.

A NATURAL HISTROY OF WESTERN TREES—Donald C. Peattie—*Houghton Mifflin*, 751 p., illus., $6.00. The lore, romance, economic facts and guide to over two hundred kinds of trees in western North America.

THE NATURAL SUPERIORITY OF WOMEN—Ashley Montagu—*Macmillan*, 205 p., $3.50. A plea for more mutual love and understanding, and complete social equality of the sexes.

ORGANIZING FOR IMPROVED PRODUCTION AND COST CONTROL—*American Management Association*, 68 p., illus., paper, $1.25. Papers on "Organization of the Manufacturing Executive's Job," "Preventive Maintenance," "Maintenance Costs," etc.

PATHS OF LONELINESS: The Individual Isolated in Modern Society—Margaret M. Wood—*Columbia University Press*, 250 p., $3.75. Shows how modern society creates lonesomeness, and analyzes isolating situations encountered by such groups as the aged, the single, the unemployed, etc.

THE PHILOSOPHY OF NATURE—Andrew G. Van Melsen—*Duquesne University Press*, 253 p., paper $3.75, cloth $4.50. Discusses the status and specific problems of the philosophy of nature and its relationship to science.

THE PRIMITIVE CITY OF TIMBUCTOO—Horace Miner—*Princeton University Press*, 295 p., illus., $5.00. A sociological study of primitive urban life in this African city in which three well-differentiated racial strains live.

PSYCHIATRIC TREATMENT—Association for Research in Nervous and Mental Diseases—*Williams & Wilkins*, Vol. XXXI, 451 p., illus., $9.00. Proceedings of the Association in a symposium at which some of the strengths, weaknesses and omissions in present-day psychiatric treatment were covered.

THE PSYCHIATRIST AND THE LAW—Winfred Overholser—*Harcourt, Brace*, 147 p., $3.50. Considers the four main aspects of forensic psychiatry.

RADIOISOTOPES IN INDUSTRY—John R. Bradford, Ed. — *Reinhold*, 309 p., illus., $8.00. Covers the many uses of radioisotopes, laboratory construction, shielding, personnel protection, handling techniques and radioactive waste disposal.

REGISTER OF NEW FRUIT AND NUT VARIETIES, 1920-1950—Reid M. Brooks and H. P. Olmo—*University of California Press*, 206 p., $3.00. Information on origin, parentage and most valuable characteristics.

THE RIVER HORSE—Nina Ames Frey—*William R. Scott*, 150 p., illus., $2.50. For children, this is the story of a danta, a little wild river horse native to Guatemala, and a young descendant of the Mayan Indians. Ages 10 up.

SCIENTIFIC BOUNDARIES IN AIR POLLUTION STUDIES—W. C. L. Hemeon—*Mellon Institute of Industrial Research*, 6 p., illus., paper, free upon request to publisher, 4400 Fifth Avenue, Pittsburgh 13, Pa.

SOLITUDE AND PRIVACY: A Study of Social Isolation, Its Causes and Therapy—Paul Halmos—*Philosophical Library*, 181 p., $4.75. A study based on the assumption that isolation is a central issue in man's neurosis and material insecurity.

STUDIES OF ARCTIC FORAMINIFERA—Alfred R. Loeblich and Helen Tappan—*Smithsonian Institution*, Vol. 121, No. 7, 150 p., illus., paper $2.00. Primarily a taxonomic study of Arctic fauna.

THE THEORY OF HOMOGENEOUS TURBULENCE—G. K. Batchelor—*Cambridge University Press*, 197 p., illus., $5.00. Covers mathematical representation, kinematics, the general dynamics of decay, etc., in the field of homogeneous turbulence in fluids.

TO LIVE AND TO WORK—*American Heart Association*, 37 p., illus., paper, free upon request to publisher, 44 E. 23rd Street, New York 10, N. Y. This 1952 annual report indicates progress in the fight against heart disease.

TRAINS ROLLING: Stories on Railroads at Home and Abroad—H. A. McBride—*Macmillan*, 269 p., illus., $5.00. For railroad enthusiasts, this concerns the smaller, important Eastern railroads, and the foreign systems of Spain, Western Germany and Morocco.

TRILOBITES FROM THE LOWER CHAMPLAINIAN FORMATIONS OF THE APPALACHIAN VALLEY—Byron N. Cooper—*Geological Society of America, Memoir* 55, 69 p., illus., $1.75. Describes and illustrates 45 species of lower Middle Ordovician trilobites.

YOUR GUIDE TO A GREENER LAWN—Geoffrey S. Cornish—*Massachusetts Horticultural Society*, 63 p., illus., paper, 75 cents. Assists the home owner in solving his lawn problems.

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ENTOMOLOGY

No Stopping Jap Beetle

Control measures have held back spread of the voracious Japanese beetle, but will not halt it. Turning inspection and quarantine duties over to states is being considered.

➤ THE JAPANESE beetle may have us licked.

The voracious beetle will spread wherever it wants to go, regardless of the countermeasures we take, Avery S. Hoyt, chief of the U. S. Bureau of Entomology and Plant Quarantine, told SCIENCE SERVICE.

Control measures carried on by the Federal government with the cooperation of state and local authorities have held back the march of the Japanese beetle, he said, but cannot be expected to eradicate it. The main job of Japanese beetle control has been to give the American farmer time to learn to live with the pest.

If Secretary of Agriculture Benson's budget cut-backs are accepted by Congress, Federal inspection of materials suspected of harboring Japanese beetles or their grubs will be abruptly ended. This will mean a saving of $332,700 in the department's budget; but the individual states will be expected to assume the job of inspection and certification of disinfested goods.

However, this move to turn the beetle control over to the states has been under consideration for a long time, Mr. Hoyt said. Discussions towards uniform quarantine laws for the individual states have been going on for over two years.

Quarantine measures are based on suppressing beetle spread in individual shipments of possibly contaminated goods. The "certificate of inspection" is more accurately a certificate that insecticides have been applied to the suspected materials. This is a job that state authorities can now take over cheaply and effectively.

The real battle against the Japanese beetle is carried on already at the state and local levels, where insecticides, traps and the beetle's natural enemies are used to decimate its numbers in a given area. Quarantine is a "policy of containment," aimed at slowing down the beetle's infiltration into uninfested states.

Federal quarantine has been in effect against the Japanese beetle since 1919, when the pest was restricted to New Jersey alone, where it was first discovered three years before. Since that time, in spite of control measures, it has radiated outward about five to ten miles each year, until now it is found over an area of about 40,000 square miles. This has been largely a natural spread, though, indicating that quarantine has been effective in preventing the beetle's distribution across the nation in interstate commerce.

The Japanese beetle, *Popillia japonica*, emerges from the soil during the hot summer months to plague farmers and gardeners with its insatiable appetite. It finds the leaves and soft parts of nearly 275 kinds of trees, shrubs and other plants very acceptable entrees. The adult is a shiny brown and green with 12 white spots. When still a worm-like grub in the ground, the young beetle chews away at lawn grass roots and roots of other plants.

The Japanese beetle's dinner bill, paid by the nation, is some $10,000,000 a year.

Science News Letter, April 25, 1953

TECHNOLOGY

Mirrors, Periscopes Show "Hot" Plutonium

➤ MIRRORS REFLECT the image of radioactive plutonium, but they do not reflect the dangerous radiation given off by the substance.

For this reason, mirrors and periscopes are used at the Atomic Energy Commission's plutonium plant, Richland, Wash., to help workers see around protective barriers. Special glass windows and water-filled tanks also are helping the scientists get a safe picture of a dangerous substance.

Periscopes are more widely used than mirrors. The 'scopes can be equipped with photographic lenses that allow good pictures to be taken. Mirrors often distort distances, making seeing difficult for scientists who are watching.

Some of the periscopes have turrets of lenses that provide scientists with different degrees of magnification. Others can be fixed to see around corners, inside pipes and up stair wells. Some of the periscopes also have synchronized searchlights to illuminate the subject.

Scientists sometimes must "handle" radioactive materials in water tanks. The water is an effective filtering agent against deadly radiation. The radioactive material is easily seen on the bottom of the tank because of the high refractive index of water. This makes the bottom seem closer than it actually is.

But if the water is turbulent, a glass-bottomed wooden box floating in the tank will provide a clear view, state the General Electric scientists who are running the plant for the AEC.

Foot-thick glass windows also are used to protect personnel. Made of layers of plate glass, the windows afford about the same protection as the same thickness of concrete. A new type of glass containing large amounts of lead oxide offers more protection than the same thickness of steel.

Science News Letter, April 25, 1953

• RADIO

Saturday, May 2, 1953, 3:15-3:30 p.m., EDT

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Finalists from some of the local Science Fairs will be interviewed in anticipation of their visit to the Fourth National Science Fair at Oak Ridge, Tenn., May 7-9.

INVENTION

Rotary Bomb Bay Door Eliminates Hazard

➤ A ROTARY bomb bay door has been invented that actively ejects bombs from today's fast-flying airplanes.

The bomb bay door rotates around its center axis so that when the bomb bay is "open," the airplane is still closed.

Inventors Albert T. Woollens of Baldwin, and Werner Buchal of Bel Air, Md., report that bomb bays of World War II vintage are not satisfactory on today's faster bombers. When the old-style doors snap open, so much air turbulence is created around the bomb bay that released bombs actually tumble around in the bomb bay for a while instead of falling out.

This is "obviously a dangerous situation," they state. The open doors also produce so much drag on the bomber that the big plane slows down during the critical bombing run. This makes it difficult to bomb targets accurately.

The new door carries bombs shackled to its "inside" face. Each shackled bomb rests against ejection pistons which try to push the bomb away from the door.

When the bombing run is to be made, the door is revolved so that the bombs are on the outside of the plane. When the shackles are released, the ejection pistons thrust the bombs away from the plane so the bombs neither hit the plane nor collide with each other.

Adaptable to carry ground-strafing rockets, the bomb bay door is detachable from the plane and can be loaded on the ground. Then it is hoisted into position in the plane.

The inventors assigned their patent, No. 2,634,656, to the Glenn L. Martin Company, Middle River, Md.

Science News Letter, April 25, 1953

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BIOCHEMISTRY

Aid Artery Hardening Prevention by Iron Diet

➤ A NON-DIET method of controlling artery hardening seems in prospect for the future. Instead of cutting out all fats, eggs and many other foods containing cholesterol, patients would take an iron medicine.

This suggestion is made by Drs. M. D. Siperstein, C. W. Nichols, Jr., and I. L. Chaikoff of the University of California in *Science* (April 10).

The cholesterol-free diet is under trial in some places on the theory that too much cholesterol in the blood causes fatty degeneration of artery walls.

Bile, the California scientists find, favors absorption of cholesterol from the intestines. Adding bile to a cholesterol diet fed to chickens increased enormously the amount of cholesterol in the birds' blood plasma.

Adding the iron compound, ferric chloride, to the bile and cholesterol diet kept the cholesterol in the blood way down. This is probably because the iron compound binds the bile salts. The iron compound had the same effect when given to birds fed a regular diet plus cholesterol but without the bile.

Science News Letter, April 25, 1953

VITAL STATISTICS

200,000 U. S. Lives Saved By Medical Advances

➤ A SAVING of 200,000 lives in five years has been achieved in this nation by "the rapid advances in medical science, the steady rise in the general standard of living and improved safety measures," statisticians of the Metropolitan Life Insurance Company report in New York.

About one-fourth of the lives saved are those that would have been taken by heart and blood vessel diseases. Most of this saving was in women's lives.

The figures on life savings are calculated by comparing the number of deaths in the United States in 1950 with the number that would have occurred if the 1945 death rates had prevailed.

Science News Letter, April 25, 1953

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ECOLOGY

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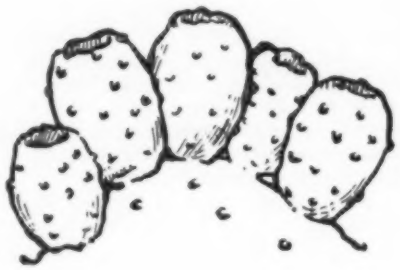

Spiny Globe-Trotter

➤ THE CACTUS family as a whole is pretty strictly American, and most of its 1,500-odd species have remained in their native hemisphere.

A few kinds of the oval-jointed prickly-pear cactus have, however, penetrated into practically every part of the world where the climate suits them. They have made themselves so thoroughly at home that in most places where they now grow they are regarded as part of the native vegetation.

In most places the prickly-pear cactus was introduced as a botanical curiosity for rock gardens, or possibly for its edible fruits. Once established, it has shown a mobility in migration astonishing in a plant not equipped with special dispersal means.

Where it has been considered useful or ornamental, the cactus has of course had plenty of willing human aid; but it has also managed to spread over wide areas of semi-arid land where man-assisted propagation is out of the question.

Lack of special dispersal means have been largely offset by the high survival ability of the plant. One of its leathery-skinned, succulent joints, chance-snagged on the wool of a sheep, might ride only a few hundred yards or at most a mile or so. But where it fell off it would not perish like the twig or leaf of an ordinary plant; it would strike root and grow up into a healthy, bristly cactus bush.

The role of birds, rodents and other animals in carrying cactus seeds is not at all well known, but it must be of some significance.

In some of the lands to which it has been carried, prickly-pear has become a major pest. Most spectacular, of course, was the case of Australia, where the plant was rendering millions of acres of the best grazing and farm lands unusable. Importation of the cactus moth as a counter-pest came just in the nick of time.

On the other hand, cactus is a prized hedge plant on Madagascar and one or two other tropical islands where cattle are numerous and have to be kept out of yards and gardens.

Prickly-pear cactus demonstrated its capacities as an emigrant plant very early. It appeared in the Mediterranean basin very soon after the discovery of America, and in a few decades was all over the lands on both shores. It has become so common in Palestine, for example, that one of the most common of artists' anachronisms is to paint it into Biblical scenes as part of the landscape of 2,000 or more years ago.

Science News Letter, April 25, 1953

ENTOMOLOGY

Tumor-Causing Hormone Stimulated in Cockroach

➤ COCKROACHES FROM Latin America, which are two inches or more long, are the charge of a woman scientist at the University of Colorado, Dr. Berta Scharrer, who came over from Germany in 1945. She found a parallel between the hormone producing centers of the brains of higher animals, like man, and of the cockroach. In both animal and cockroach, hormones produced in these centers pass along nerves to a place for later usage.

Dr. Scharrer cut this nerve in the cockroach. Hormone production in both the brain center and the terminal point of the nerve pathway was stimulated. This terminal point, known as the corpus allatum and which also produces hormones, becomes greatly enlarged, with the result that tumors developed.

Science News Letter, April 25, 1953

TECHNOLOGY

"L" Fence Staple Outdoes U-Shaped Ones in Tests

➤ A POWERFUL little fence staple with a threaded shank sticks to the job even when shock loads are 90% larger than ordinary staples can take.

Tests at the Virginia Polytechnic Institute Wood Research Laboratory, Blacksburg, reveal that the L-shaped fence staple does its job better in creosote-treated posts than the conventional U-shaped staple.

The new staple has a long shank and a short one. The long shank is threaded with wood-gripping flanges that dig into the wood. The longer the staple remains in the wood, the harder it is to get out. Ordinary plain-shanked staples slowly lose their holding power and eventually fall out.

This is particulary true with creosoted posts. Creosote acts as a lubricant and cuts the holding power of plain staples by as much as 40%.

The strong little Samson is made by the Independent Nail and Packing Co., Bridgewater, Mass. Currently it is being distributed to lumber yards, building-materials dealers and hardware stores as a replacement for the ordinary U-shaped staples.

Science News Letter, April 25, 1953

BIOCHEMISTRY

Nerve War Gas Tried

Chemical killer equal to A-bomb as a military weapon tested on human guinea pigs, doctors reveals. If poisoning is caught quickly enough, atropine injections aid recovery.

➤ HUMAN VOLUNTEERS have now gotten, in small doses, a chemical killer that may equal the atom bomb as a military weapon.

Who the volunteers are, whether soldiers, doctors, medical students or other persons, is being kept secret by security regulations.

The chemical itself does not even have a name that can be told. It was called just "nerve gas" by Dr. A. McGehee Harvey when he reported to the American College of Physicians meeting in Atlantic City, N. J., results of the tests on volunteers which he and his associate, Dr. David Grob, of Johns Hopkins School of Medicine, Baltimore, made under contract with the Army Chemical Corps Medical Laboratories.

The nerve gases are, chemically, "organic esters of phosphoric acid derivatives." Some chemicals of this general group have been widely used as insecticides. These are known as parathion, TEPP and HETP.

The nerve gases are "among the most potent of the known chemical warfare agents," and are also "the most adaptable to long range attack, as upon civilian populations," Dr. Harvey pointed out to the meeting.

Most of them were made by the Germans before and during World War II, and some of the German installations for production and study of nerve gases are in the eastern zone of Germany.

One of the more poisonous of the group is the "nerve gas" Drs. Harvey and Grob studied. Like the others, it is colorless, tasteless and without distinctive odor.

The volunteers all recovered completely from the moderate "nerve gas" poisoning they suffered as a result of small doses. When recovery from severe poisoning by the related, less poisonous chemical, parathion, took place, it also was complete.

The volunteers suffered symptoms ranging from slight eye pain, dimness of vision and headache to muscle cramps and general weakness of muscles, including the breathing muscles, giddiness, insomnia, nightmares, difficulty in concentrating and confusion.

Symptoms may start within a few minutes after exposure. Mild symptoms may last a few hours. Moderately severe ones may not reach their height for four to eight hours and usually grow less over a period of one to six days.

How long a man can live after exposure to "nerve gas" is not known. In accidental deaths from the less poisonous parathion, the average survival time after exposure was 10 and one-half hours. In some cases it was only one hour.

During the short time between exposure and death, doctors can do something. They can inject atropine, into the muscles for mild or moderate symptoms, into the veins and in larger doses for severe symptoms. For prolonged convulsions, the epilepsy drug trimethadione or a barbiturate or ether may help. For breathing difficulty or arrest, artificial respiration must be given at once and may be needed continuously for hours. Smoking should be avoided until the symptoms have subsided.

Atropine should not be given as a preventive before possible exposure because it may increase absorption of "nerve gas" through the lungs.

Persons once exposed to "nerve gas" are more susceptible to further exposure for several weeks.

A simple chemical test of the blood plasma and the red blood cells can be used to detect "nerve gas" poisoning in persons who may have been exposed and who have not developed enough symptoms for positive diagnosis. This test was developed by Dr. H. O. Michel of the Army Chemical Center, Edgewood, Md., and is now being used in factories making the related parathion and other insecticides.

The recommendations for diagnosis, treatment, and prevention through gas masks and protective clothing are based largely on experience in treating the moderate "nerve gas" symptoms in the volunteers and severe poisoning in accidental exposure to parathion.

The work reported by Dr. Harvey was released by security officers for presentation.

Science News Letter, April 25, 1953

MEDICINE

Heart Arteries Blocked Oftener, Earlier in Men

➤ A SEX difference in hearts and arteries was reported by Dr. Arthur M. Master of New York at the meeting of the American Heart Association in Atlantic City, N. J.

The heart arteries get blocked much oftener in men than women, and at an earlier age. But high blood pressure is "not very important" in the development of this condition in men, although it is a very significant factor in development of the heart artery blockage in women.

"This observation," Dr. Master said, "differs from that of any reported studies on the relationship of increased blood pressure to the onset of coronary occlusion (heart artery blockage)."

Science News Letter, April 25, 1953

Questions

ENTOMOLOGY — What does the Japanese beetle's appetite cost this nation yearly? p. 269.

• • •

GENERAL SCIENCE—What are some of the earmarks of research scientists? p. 261.

Why is scientific Washington in a turmoil? p. 263.

• • •

MEDICINE—How have blood types and cancer been found related? p. 265.

• • •

NUTRITION—What is advantage of three glasses of milk per day for children? p. 260.

• • •

PSYCHIATRY—How can a recording machine help speed psychiatric interviewing? p. 260.

• • •

PUBLIC HEALTH—What may sniffles in spring signify? p. 265.

• • •

Photographs: Cover, General Electric Company; p. 259, Raytheon Manufacturing Company; p. 261, U. S. Air Force; p. 262, Chicago Natural History Museum; p. 272, Pee Gee Bee.

TECHNOLOGY

Huge Sphere Will House Atomic Sub Power Plant

See Front Cover

➤ THE LARGE opening, resembling an eye, shown on the cover of this week's SCIENCE NEWS LETTER, is for an air-tight entrance lock into the gigantic steel sphere that will house an atomic power plant for submarines.

It is being built by the Knolls Atomic Power Laboratory, operated by the General Electric Company for the Atomic Energy Commission. The opening for another lock can be seen in the opposite wall of the structure. Rising in the middle of the sphere is the base of a 400-foot tower, used for erecting the huge, inch-thick steel plates that comprise the sphere.

Science News Letter, April 25, 1953

YOUR HAIR

Its Health, Beauty and Growth

By Herman Goodman, M.D.

A medical specialist tells you what to do to save and beautify your hair, stimulate healthier hair growth, and deal with many problems, as: Dandruff—gray hair—thinning hair—care of the scalp—baldness—abnormal types of hair—excessive oiliness—brittle dryness—hair falling out—infection—parasites—hair hygiene—glands—diet—coloring—and myriad other subjects concerning hair.

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⚙ *IMPROVED LAWN food is used with special feeding devices. They mix the dry powder fertilizer with water and discharge it through an attached garden hose. The sprinklers come in a hand-held model for sprinkling small lawns and gardens, a large tank model for greater areas and a probe-like model for feeding tree and shrub roots. The plant food supplies trace minerals for proper plant growth.*

Science News Letter, April 25, 1953

⚙ *INSECT-KILLING LIGHT bulb has recessed pockets in which pellets of an insecticide are vaporized. Designed for home, commercial or camp use, the light bulb works in all positions and should burn more than 8,000 hours.*

Science News Letter, April 25, 1953

⚙ *CRYSTALLINE CHEMICAL "doubles the life expectancy of home heating oil tanks" by retarding corrosion inside due to condensed water, the maker reports. Dropped into the oil, the chemical reacts with the steel tank and with droplets of water to cut corrosion. The chemical does not dissolve in oil.*

Science News Letter, April 25, 1953

⚙ *GOLF TEE, molded of plastic into a tripod affair, can be adjusted to desired height merely by spreading or trimming the flexible legs. The golf ball rests snugly in a small hole at the top of the brightly colored, easy-to-find tee, as shown in the illustration.*

Science News Letter, April 25, 1953

⚙ *SEALING TAPE with a specially treated 60-pound paper backing "sticks at a touch" and is designed for commercial and military carton sealing. Stronger and more waterproof than other carton sealing tapes, the material requires no wetting and is unaffected by severe temperature and humidity conditions, the manufacturer states.*

Science News Letter, April 25, 1953

⚙ *BOX OPENER is outfitted with a razor blade to open the tops of paper boxes quickly and neatly. Small and compact, the unit is made of colored plastic. The shielded razor blade can be changed readily.*

Science News Letter, April 25, 1953

⚙ *MAP HOLDER for motorists is made of a transparent plastic. It features eight various-sized pockets that accommodate vacationing paraphernalia that usually clutter the seat and glove compartment of the car. The unit hooks across any auto seat back and holds maps and reference books in a convenient spot for the driver.*

Science News Letter, April 25, 1953

⚙ *ONE-SIZE SOCK for men is woven of thermoplastic nylon and stretches to fit any size foot. The manufacturer says it molds to the shape of the foot like "second skin," and that it is guaranteed for a year against holes due to wear.*

Science News Letter, April 25, 1953

A FEW MEMBERSHIPS ARE NOW AVAILABLE

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Do You Know?

Beer is a 10,000-year-old *beverage.*

Parakeets originally were raised in Australia.

Household electric *fans* are only about 15% efficient.

Of the 96 known *elements,* only 55 are present in living plant or animal matter.

Extensive experimental work now under way may lead to aluminum *radiators* for tomorrow's automobiles.

For protection and efficiency in combat, modern fighter *pilots* wear outfits and accessories weighing 144 pounds.

If mounted on an enemy submarine, America's 280 mm. *atomic cannon* could paralyze New York City in 15 minutes.

A modern research plane can fly four miles in 12 seconds; the Wright brothers' plane covered only 120 feet in the same length of time during its history-making *flight* nearly 50 years ago.